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[1] Führer, H., *Zs. ges. exp. Medizin, Berlin,* **1,** 1913, (397).

[2] "Vollständig von Eiweiss befreite Auszüge aus den Hinterlappen von Rinderhypophysen." Fühner, *loc. cit.,* p. 399.

[3] Harrower, H. R., *Practical Hormone Therapy,* New York, 1914, p. 460. A Glossary of Terms.

[4] Fühner, *loc cit.,* p. 443.

[5] Cf. Aldrich, T. B., *J. Amer. Chem. Soc., Easton, Pa.,* **38,** 1915, (203).

[6] The biuret reaction was made at room temperature. Unfortunately we did not apply heat as is done when making this test for histidine. This substance was no doubt present, having been set free from the albumoses by hydrolysis, as is shown by the positive Pauly test.

[7] This also contained the redissolved residue from the 10 cc. used for the estimation of dry matter.

[8] Fenger, F., *J. Biol. Chem., Baltimore,* **25,** 1916, (417).

[9] Cf. Ott, Enriquez and Hallion, Zuelzer, Weiland, Köhler and others.

ON THE RÔLE OF THE THYMUS IN THE PRODUCTION OF TETANY

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In a number of experiments on larvae of *Amblystoma punctatum* and *A. opacum* the influence of thymus was studied. It was found that the effect of thymus upon these animals is not exactly similar to its effect on tadpoles of frogs or toads. With regard to this difference the most conspicuous and important effect of the thymus feeding in Salamander larvae is the occurrence of severe tetany in the thymus-fed larvae.

Up to the present, 67 specimens of *A. punctatum* and *A. opacum* were fed exclusively on Thymus after they had reached an age of about six to fourteen days. In each single individual tetany was produced.

For several days previous to the occurrence of the acute attacks, the animals are less active and their appetite is diminished. The acute stage appears in two forms: a mild form and a severe form. The mild form manifests itself by clonic convulsions of the hind limbs and the tail, while the severe form consists in clonic convulsions of the entire system of muscles. In the beginning of the tetany period, the attacks exhibit the characteristics of the mild form, then become severe and towards the end of the entire period again are mild. Each acute attack is followed by a tonic spasm of the entire body, during which the body is stiff for a short time. After several acute attacks the hind limbs become permanently twisted and stiffened and are to some extent paralyzed. Later on the forelegs and in severe cases even the neck and spinal cord become paralyzed.

The severity depends to a great extent on the temperature in which the animals are kept. In low temperature the acute tetany begins later and is of shorter duration than in high temperature In high temperature some animals succumb from the attacks; those which survive metamorphosis never show a complete recovery. In low temperature recovery may be complete and the animals can live after metamorphosis for many months and reach an age of at least fourteen months, even if they are kept on exclusive thymus diet after metamorphosis.

It should be particularly emphasized that no matter in what temperature the animals are kept, acute attacks cease a short time before metamorphosis and never occur in metamorphosed animals.

The symptoms of the attacks caused by thymus in the larvae of *A. punctatum* and *A. opacum* are the same as in the attacks observed in mammals after parathyroidectomy and the theory that they are caused by the same agent as *Tetania thyreopriva* suggests itself.

It would seem then, that thymus contains the substances which cause tetany and excretes them into the body, from which they are removed by the parathyroids. Extirpation of the latter would thus cause tetany.

If this is true, we should expect that thymus-feeding would produce tetany only in such species as have no parathyroids. In fact tetany in thymus-fed tadpoles has never been reported; these animals develop the parathyroids several days after hatching. The Salamander larvae however, have no parathyroids and the occurrence of tetany in thymus-fed larvae of that species corresponds with our expectations.

Furthermore, according to such a theory, thymus-fed animals which suffer from tetany should become free from it as soon as they develop parathyroids. The Salamanders develop parathyroids when they go into metamorphosis, which is actually the time that acute tetany ceased in our larvae.

Although many experiments must still be made to clear the entire problem—some of which are already in progress—for the present, the above theory might be valuable as a working hypothesis.